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Article

International Students in Israel during the COVID-19 Pandemic: Risk and Protective Factors for Depression, Need of Help, and Seeking Help from the University

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Abstract: International students were – and continue to be – particularly vulnerable to the negative consequences of the COVID-19 pandemic. 625 international students in Israel completed an online survey assessing risk and protective factors (socio-demographics, health status, COVID-19 related experiences/concerns, financial difficulties, academic challenges/experiences, social support, and coping) for student's depression, perceived need for help, and seeking help from the university. Approximately 15% of participants had moderately-severe or severe depression. Over half needed at least a little help, but only 19.7% had asked for help. Depression symptoms were related coping ($\beta=-.34$) and health ($\beta=.12$). Need for help was related to being a postdoc ($\beta=-0.26$) and experiencing food insecurity ($\beta=0.20$). Universities need to develop services which address international students' unique needs during global crises.

Keywords: international students; Israel; depression; need for help; COVID-19

1. Introduction

Higher education students are typically not seen in the scientific literature as a particularly vulnerable group in times of stress (Authors, 2021a). In the context of the COVID-19 pandemic, universities moved to online teaching, adding new challenges and burdens to the accumulated stressors associated with fears of being exposed to COVID-19, restrictions on travel, social distancing, and economic crisis (Liu et al., 2020). For instance, recent studies suggested that students had concerns about themselves and close ones, and experienced symptoms of anxiety and depression during the first two years of the pandemic (Romeo et al., 2021; Wang et al., 2020). A recent systematic review and meta-analysis of studies on students' mental health difficulties during the pandemic concluded that the pooled prevalence of depressive symptoms was 34%. The authors concluded that the prevalence of symptoms during the pandemic were higher than rates in similar student populations before the pandemic (Deng et al., 2021).

Students in higher education are not a homogenous group. Some students experience more stressors than others, and these stressors have implications for their wellbeing and mental health. The present study focuses on a unique and vulnerable group of higher education students who may be particularly at-risk of poor mental health during the pandemic – international students who have chosen to learn overseas. These students may experience worry for their loved ones at home while they are away from their home country and their extended families. Furthermore, imposed travel restrictions, which were prevalent around the world in the first two years of the pandemic, meant that international students were unable to travel home to visit family, or may have been 'locked out' of the host university's country. During times of global health crisis, many of these international students may experience an increased level of isolation and lack of social support. In addition, these students may also have less flexibility than local students in terms of changing their academic plans,

adding to their challenges. The pandemic may also have negative implications for international students' health insurance coverage (Ma & Miller, 2020). Taken together, the multiple stressors may have deleterious effects on their mental health and amplify their need for help (Firang, 2020).

The present study examines a range of risk and protective factors associated with depression, perceived need for help, and seeking help from the university, among international students in Israel. Specifically, based on relevant literature outlined below, the study examines students' socio-demographic characteristics, health status, COVID-19 related experiences and concerns, financial difficulties, academic challenges and experiences, and social support as predictors of 1) depression, 2) perceived need for help, and 3) seeking help from the university.

1.1. *Mental Health of International Students*

Literature reviews conducted prior to the pandemic on stress and wellbeing of international students in English-speaking countries revealed that international students may have enhanced mental health needs due to their special circumstances (Alharbi & Smith, 2018). Similarly, a systematic review identified a range of emotional and adjustment difficulties among international students pre-COVID including depression, anxiety, symptoms of Post-Traumatic Stress Disorder (PTSD), suicidal ideation, acculturative stress, homesickness, and psychological distress (Brunsting et al., 2018). These difficulties may have been exacerbated during the pandemic.

There are clear indications of high levels of mental health difficulties and adjustment problems experienced by many international students during the pandemic. Chinese international college students reported high levels of self-injury ideation (males=23.4%; females=28.6%) and suicidal attempts (males=17.9%; females=20.7%) (Li et al., 2021). Kim and Kim (2021) found high levels of sleep problems (47.1%) and depression (49%) among international students in South Korea. Another study on international students in China found high prevalence of symptoms of depression (73.4%), stress (58.5%), insomnia (77.6%), psychological distress (71.4%), and loneliness (62.4%) (Alam et al., 2021).

There has been a relatively large number of studies which examined risk and protective factors associated with mental health and adjustment among international college students *before* the pandemic (e.g., Brunsting et al. 2018). However, few studies attempted to identify risk and protective factors for mental health outcomes among international students *during* the pandemic. Of the few studies which have tackled international students' mental health during the pandemic, the risk and protective factors have covered several areas, as detailed below.

1.2. *Risk and protective factors*

1.2.1. Socio-demographic characteristics

Several socio-demographic variables have been associated with international students' mental health during the pandemic. A study with Chinese students in the US reported higher prevalence of self-injury ideation among females than males (Li et al., 2021). In South Korea, however, the prevalence of mental health problems in international students was higher among males than females (Kim & Kim, 2021).

Among international students in China, severe symptoms of all psychological outcomes were found to be associated with the 26–30-year-old age group (Alam et al., 2021) but in a study of Chinese students in the US, age was not associated with mental health difficulties (Li et al., 2021). Further, psychological difficulties have been associated with living with roommates, and staying in the host country for less than two years (Alam et al., 2021), whereas steady relationships with a partner have been identified as a protective factor for depression (Fialho, 2021).

1.2.2. Physical health

Perceived health has been strongly associated with mental health difficulties during the pandemic, including depression (Mazza et al., 2020). The health status of family and friends may also be associated with mental health difficulties (Kim & Kim, 2021). Similarly, during the pandemic,

many people experienced *concerns and worries* regarding the effects of COVID-19 on oneself and loved ones (Authors, 2020; Cao et al., 2020). Concerns may also be related to the lack of clarity regarding when the pandemic will end and how to prevent contagion (Authors, 2022). Such concerns and worries are associated with mental health related issues such as loneliness (Horesh & Brown, 2020). As international students live far away from their families, their COVID-related concerns and worries may be particularly associated with depression.

1.2.3. Economic difficulties

Economic challenges during the pandemic may be a significant risk factors for mental health difficulties. For example, among international Chinese students, severe economic pressures were associated with high anxiety during the pandemic. In contrast, in South Korea, Kim and Kim (2021) report that international students with *higher* income experienced more mental health difficulties.

One of the potential stressors, as well as protective factors, in the lives of international students is their *educational experiences* during the pandemic. Students may have negative experiences due to the changes in educational practices but they may also receive additional supports from the university and the move toward online learning may facilitate their educational involvement. International students' negative perceptions of educational experiences, including low *trust in the university*, are associated with worse mental health outcomes (Fialho et al., 2021; Khan et al., 2021; Xu, 2021).

1.2.4. Social support

Support has been widely recognized as a powerful protective factor against depression and other emotional difficulties during the pandemic (Authors, 2022; Cao et al., 2020; Xu, 2021). Indeed, low social support among international students during the pandemic was related to higher stress (Lai et al., 2020).

1.3. Gaps in the literature

Although the literature on mental health difficulties among international students during the pandemic is informative, there are some important gaps in knowledge that will be addressed in the present study. First, previous studies do not include coping as a potential risk or resilience factor. This is despite ample evidence from other populations showing that effective coping (e.g., control coping, problem-focused coping) is related to lower mental health difficulties including depression (Coiro et al., 2021; Yang, 2021). The present study will include the students' perceptions of their ability to cope with the stress related to COVID-19 as a correlate with depression.

Second, previous studies have not addressed the students' need for help. This is rather surprising, given the policy and practical value of exploring perceived need for help (Authors, 2011; Authors et al., 2021a). Further, studies have found that there are gaps between experiencing emotional difficulties and help *seeking* behaviors (Dunley & Papadopoulos, 2019). Although they are often highly associated (Authors, 2014, 2022), there may be differences between the characteristics of students experiencing mental health difficulties and students who perceive themselves as needing help (Nash et al., 2017). Perceived need for help may be a link between mental health difficulties and help seeking (Authors, 2022). Identifying the factors related to perceived need for help and help seeking could assist universities to identify the students who may need more help, students who experience mental health difficulties but do not see themselves as needing help, and students who perceive themselves as needing help but do not seek it.

1.4. Study Aims

The present study examined potential risk and protective factors for depression, perceived need for help, and help seeking from the university among international students in Israel during the pandemic. The study examined sociodemographics, health-related issues, COVID-related exposure

and concerns, economic challenges, academic experiences, social support and perceived coping as the risk and protective factors.

2. Method

Data collection occurred in Israel from October 2020 to December 2020. This period was characterized by large numbers of identified cases of COVID-19, a second lockdown, and the vaccinations were not yet available.

2.1. Population and Sample

In the academic year 2019-2020 there were 3,315 international higher education students in Israel, of which, 1,932 (58.3%) studied in the four universities included in this survey (Central Bureau of Statistics, 2021). The study sample consists of 625 international students who provided complete surveys.

2.1.1. Data Collection Procedures

The offices responsible for international students at each of the four universities distributed an email to international students requesting their participation. The email contained a link to the anonymous survey. During the survey, participants were asked whether they wanted help from the university and whether they could be contacted by the department responsible for international students. Those who answered 'yes' and provided their email were then emailed by the appropriate university staff to initiate their request for help.

2.1.2. Samples Characteristics

Of the 625 participants 52.6% were female, 65.1% had a partner and 11.1% had a child. See Table 1 for other sociodemographics.

Only 64.6% (n=404) reported their country of origin. Of these, the most frequent countries were India (n=80; 12.5% of the total sample), USA (n=63; 10.1%), China (n=45, 7.2%), and Germany (n=36, 5.8%). We estimate that 90% of participants were staying in Israel during the initial pandemic period and during data collection (63.3% did not leave Israel; 15.3% left Israel but were back at the time of the survey; 8.8% left Israel and were not back; and 12.6% were not yet in Israel or had other complex situations).

Table 1. Percentages, Means, SD's of Study Variables and Bi-Variate Associations with Depression, Perceived Need for Help, and Seeking Help from the University.

Variable	M (SD) (%)	Depression		Need Help		Seeking Help from the university	
		Correlation		95% CI			
				Odds Ratio	LL	UL	
Depression	7.11 (6.53)	-	.37***	1.02	0.99	1.05	
Perceived need for help	0.65 (0.52)	.37***	-	3.38***	2.29	4.99	
Gender (male)	52.6%	.12**	0.06	1.07	0.72	1.59	
Age	29.12 (6.58)	-.19**	-.17**	1.02	0.99	1.05	
Has a partner (yes)	34.9%	0.07	.13**	0.95	0.63	1.44	
Has a child (yes)	11.4%	.11*	0.06	0.46***	0.27	0.79	
Stayed in Israel throughout the pandemic (yes)	61.0%	-0.01	-0.00	1.00	0.69	1.50	
Knowledge of Hebrew	1.69 (0.87)	0.08	0.03	0.82	0.64	1.05	
Health status	2.21 (0.96)	.33**	.17**	1.03	0.84	1.27	
At risk for Corona (Yes)	10.0%	.18**	0.02	0.86	0.43	1.72	

A family member in Israel at risk for Corona (Yes)	20.9%	.11*	.12**	0.75	0.44	1.26
A family member abroad at risk for Corona (yes)	54.9%	.22**	.02	0.94	0.63	1.41
Exposure to Covid	0.73 (0.87)	.17**	.16**	1.22	0.98	1.52
Concerns about the pandemic	3.21 (0.79)	.17**	.14**	1.31*	1.01	1.70
Corona-related personal concerns	2.97 (0.86)	.30**	.27**	1.27*	1.01	1.61
Economic down-turn	2.83 (0.84)	.45**	.34**	0.89	0.70	1.14
Economic future prospect	2.89 (0.77)	-.11*	-.26**	0.87	0.66	1.14
Food insecurity (yes)	9.5%	-.15**	-.18**	0.72	0.35	1.47
Program Level	2.57 (1.01)	-.12*	-.39**	1.04	0.85	1.27
B.A	14.2%	.12**	.11*	0.53	0.27	1.04
M.A	31.7%	-.11*	0.09	1.38	0.91	2.08
PhD	25.3%	.09*	.11*	1.29	0.83	2.00
Postdoc	22.1%	-0.06	-.32**	0.83	0.50	1.35
Positive academic experiences	3.42 (0.89)	-.26**	-.17**	0.98	0.73	1.31
Missing face-to-face interactions	3.34 (1.31)	.21**	.25**	1.09	0.89	1.33
Having been discriminated against	1.64 (1.18)	.14*	.18**	1.14	0.93	1.40
University flexibility and teaching	3.58 (1.00)	-.31**	-.16**	0.85	0.66	1.10
Support the uni. handling	7.15 (2.31)	-.27**	-.13**	1.04	0.95	1.14
Changes in academic plans	1.49 (0.71)	.19**	0.09	0.86	0.63	1.17
Social support	3.54 (0.86)	-.29**	-.24**	0.84	0.66	1.07
Coping	7.06 (2.08)	-.62**	-.34**	0.94	0.85	1.04
Change in Coping	3.27 (1.09)	-.29**	-0.08	0.89	0.74	1.07

M= mean; SD = standard deviation; 95% CI = 95% confidence interval; LL = lower limit; UL = upper limit.

2.2. Measurements

A number of structured scales were used, in addition to questions that were designed for this study, many of them proposed by university officials who work with international students.

2.2.1. Socio-Demographic Characteristics

Students were asked about their gender, age, whether they had a partner, if they had at least one child, and their *program level* (B.A, M.A, Ph.D, or postdoc).

2.2.2. Health Status

We asked about the respondent's health using a single general Self-Rated Health (SRH) Question; a valid measure for physical health in the general population (DeSalvo et al., 2006). We also asked whether the participant or family members had underlying medical conditions that put them at increased risk for severe illness from the COVID-19 virus.

2.2.3. COVID-19 related concerns

We used an adapted version of a scale to assess COVID-related concern among students (e.g., Authors, 2022). For the current study, we added questions to address specific concerns for international students (15 items). Participants rated each item on a scale from 1=Not at all worried to 5=Worried very much. The scale has two subscales:

General concerns about the pandemic (e.g., “The growing number of infected people”). COVID-related personal concerns (e.g., “That I will have emotional difficulties due to the situation”). Items were averaged for each subscale, and both had good internal reliability with the current sample ($\alpha=.79-.80$).

2.2.4. Economic Challenges

Three aspects of economic challenges were studied.

Economic downturn: We asked the participants to assess their economic situation compared with their pre-pandemic situation on a scale from 1=The situation is much worse than before; 3=The situation is similar; 5=The situation is much better.

Future economic prospect: We asked participants, “In view to the upcoming academic year, how would you describe your economic situation compared with your situation now?” The response options were on a scale from 1=The situation in the coming year will be much worse to 5=The situation will be much better.

Food insecurity: Based on the US Census Household Pulse Survey (Schanzenbach & Pitts, 2020), we asked: “Due to the Corona crisis, have you or any members of your family reduced the size or number of your meals in the last week, for economic reasons?” (Yes-No).

2.2.5. Academic Experiences

Participants completed a scale assessing challenges and opportunities in online learning and rated each item on a five-point scale from 1=Not at all to 5=Very much (Authors, 2021b). This scale had three subscales. The first subscale (3 items) assessed *Positive academic experiences* e.g., “I was able to cope with distant learning”. The second subscale (2 items) assessed *Missing face-to-face interactions* e.g., “I missed the interaction with teachers”. Items for these two subscales were averaged, and the internal reliability with the current sample ranged from $\alpha=0.66-0.85$. The third subscale (1 item) assessed *Having been discriminated against* on the basis of his/her religion, race/ethnicity, or social affiliation (Xiong et al., 2022).

We assessed an additional two aspects of academic experiences. First, *Changes in academic plans* due to the pandemic (5 items e.g., “I will drop out of this university”). The scale was measured on a 5-point scale from 1=I am not sure; 3=I do not know; and 5=Yes, definitely. Items were averaged, and the scale had adequate internal reliability with the current sample ($\alpha=0.76$). Second, *University handling of the crisis* was assessed with one question “To what extent do you support the way the university has been handling the Coronavirus crisis?” on a scale from 1=To a small extent to 10=To a very large extent.

2.2.6. Social Support

We used the valid 6-item brief form of the Perceived Social Support Questionnaire (F-SozU; Kliem et al., 2015). Items were rated on a scale from 1=Not true at all, to 5=Very true. Items were averaged, and the scale had good internal reliability with the current sample ($\alpha=0.85$).

2.2.7. Perceived Coping

We asked the participants a) to rate their perceived level of coping (on a scale 1-10; 1 item) and b) to assess the change in their coping ability since the beginning of the pandemic (1 item), on a five-point scale: 1=Coping is much worse 3=Coping is the same and 5=Coping is much better.

2.2.8. Depression

We measured depression using the 9-item Patient Health Questionnaire (PHQ-9) (Kroenke & Spitzer, 2002). Participants completed the scale to reflect things which had ‘bothered’ them over the previous two weeks, and answered on a 4-point scale from 1=Not at all to 4=Nearly every day. Scores were summed and the internal reliability with the current sample was $\alpha=.90$.

2.2.9. Need for Help

Students were asked six questions on whether they felt they needed help for 1) general support; 2) emotional support; 3) academic issues; 4) financial issues; 5) legal issues (e.g. visa's); and 6) other issues. The items were rated from 0=No, 1=Maybe, a little, and 3=I need help. Items were averaged and the scales had adequate internal reliability with the current sample ($\alpha=.76$).

2.2.10. Help Seeking from the university

Students were asked whether they wanted to be approached by the department in charge of international students in order to help them (Yes-No).

2.3. Data analysis

We first conducted descriptive analyses for all study variables and examined the bivariate associations between the study variables. To assess the factors related to depression and need for help we conducted hierarchical linear regression with all risk/protective factors that showed significant bi-variate associations with depression, in the following order of blocks: socio-demographic variables, health issues, COVID-related exposure and concerns, economic challenges, experiences as students, social support, and coping.

Because there were only a few bivariate associations with help seeking from the university, we did not conduct a multi-variate analysis on this dependent variable. All analyses were conducted using IBM SPSS Version 27.

3. Results

3.1. Bi-variate associations between risk and protective factors and depression, need for help, and help seeking

Means, standard deviations and bi-variate correlations are presented in Table 1. The table also shows the odd ratio's for how the independent variables are related to students' help seeking. Overall, 43.7% had no depression, 27.3% had mild depression, 14.2% moderate, and 8.8% and 6% had moderately severe, and severe depression, respectively. Further, 43.5% said that they needed a little help, and an additional 13% said they definitely needed help. The most frequent need for help was regarding legal issues: 30.1% may have needed help; 27% definitely needed help. Only 369 students answered whether they wanted help from the university, of which 123 said 'yes' (33.3% of respondents; 19.7% of the total sample). In the following analyses we considered no response as no request for help.

The strongest bi-variate associations with depression (all p 's $<.001$) were perceived coping ($r=-.61$), economic downturn ($r=.39$), health status ($r=0.36$), social support ($r=-.29$), and various aspects of exposure to COVID-19, e.g., COVID-related personal concerns ($r=.30$). Students' positive academic experiences were associated with lower depression. For instance, seeing the university as flexible and providing good teaching was negatively correlated with depression ($r=-.31$).

Students' *need for help* was positively correlated with depression ($r=0.37$, $p<.001$), and negatively correlated with perceived coping ($r=-.34$, $p<.001$), experiencing an economic downturn ($r=.34$, $p<.001$), and lower perceived economic prospects ($r=-.26$, $p<.001$). Postdocs expressed the lowest need for help ($r=-.32$ $p<.001$).

Seeking help from the university was associated with only a few of the factors studied. It was not associated with depression, but strongly associated with their expressed need for help (OR=3.38, $p<.001$). To further examine this issue we conducted a t-test; those who asked for help had more perceived need for help ($M=0.90$, $SD=0.50$) compared to those who did not ($M=0.56$, $SD=0.49$) $t(463)=6.67$, $p<.001$. International students who had children asked for help more than those without children (18.7% vs. 9.6%). Having COVID-related concerns was related to asking for help (OR=1.31, $p<.05$). Given the small number of significant bi-variate correlations we did not conduct multivariate analyses on seeking help from the university.

3.2. Multivariate analyses:

3.2.1. Depression

Following the bi-variate analyses, we conducted hierarchical regression analysis on *depression* as the dependent variable and included the variables that had significant bi-variate correlations with depression as the independent variables (Table 2).

Table 2. Hierarchical Regression for Depression.

Variable	95% CI for B			SE B	β	R ²	ΔR^2
	B	LL	UL				
Constant	16.00	5.88	26.12	5.14***			
<i>Step 1</i>						4.6	4.64
Gender (male)	0.53	-0.70	1.76	0.62	0.04		
Age	-0.10	-0.23	0.02	0.06	-0.10		
Has a partner (yes)	0.31	-1.20	1.83	0.77	0.02		
Has a child (yes)	0.35	-2.02	2.73	1.21	0.02		
<i>Step 2</i>						6.4	1.75
Covid-related exposure	0.05	-0.69	0.79	0.38	0.01		
<i>Step 3</i>						20.8	14.38
Health status	0.82	0.12	1.53	0.36	0.12*		
At risk for Corona (Yes)	0.41	-1.75	2.57	1.09	0.02		
A family member in Israel at risk for Corona (yes)	-0.24	-1.87	1.39	0.83	-0.02		
A family member abroad at risk for Corona (yes)	0.79	-0.55	2.13	0.68	0.06		
<i>Step 4</i>						28.3	7.52
Pandemic concerns	-0.08	-1.23	1.07	0.58	-0.01		
Corona-related personal concerns	1.15	0.05	2.24	0.56	0.15*		
<i>Step 5</i>						30.1	1.79
Economic down-turn	0.21	-0.61	1.03	0.42	0.03		
Economic future prospect	-0.07	-0.96	0.82	0.45	-0.01		
Food insecurity (yes)	-1.33	-3.53	0.88	1.12	-0.06		
<i>Step 6</i>						38.7	8.58
M.A	0.46	-1.36	2.28	0.92	0.03		
PhD	0.76	-1.28	2.80	1.03	0.05		
Postdoc	0.38	-1.83	2.59	1.12	0.02		
Positive academic experiences	-0.64	-1.44	0.17	0.41	-0.09		
Missing face-to-face	0.37	-0.13	0.88	0.25	0.08		
Ben discriminated	0.49	-0.08	1.05	0.29	0.09		
University flexibility and teaching	-0.55	-1.38	0.29	0.43	-0.08		
Support uni. handling	0.05	-0.30	0.40	0.18	0.02		
Changes in academic plans	0.01	-0.94	0.97	0.48	0.00		
<i>Step 7</i>						39.9	1.28
Support	-0.56	-1.39	0.27	0.42	-0.07	47.9	7.92
<i>Step 8</i>							
Coping	-1.07	-1.45	-0.69	0.19	-0.34***		
Change in Coping	-0.38	-1.02	0.26	0.33	-0.06		

Overall, the variables in the equations explained 47.9 % of the variance in depression ($F(26,266)=8.47$, $p<.001$). Socio-demographic characteristics were entered in the first step and explained 4.6% of the variance in depression. Younger age was a risk factor for depression but having a partner or a child was not associated with depression. Exposure to COVID-19, entered in the second step, explained a further 1.75% of the variance.

In the third step, health status and health risks associated COVID-19 had a major contribution to explained variance in depression (14.4%). Most of the contribution came from the students' self-reported health status. COVID-related personal concerns, entered fourth in the model, were also strongly associated with depression and made an independent contribution to explained variance of

more than 7.5%. Economic issues, entered in the fifth step, did not contribute much to explain variance in depression (1.8%). Academic experiences, on the other hand, were related to depression among international students in Israel, explaining 8.6% of the variance in depression. Social support, added in the sixth step, had little contribution to explained variance. Perceived coping was entered last and contributed 8% to the explained variance in depression, above all other variables in equation.

Overall, when all variables were entered to the equation, three variables stood out in terms of their standardized coefficients. This included two protective factors, perceived coping ($\beta=-.34$) and good health ($\beta=.12$), and one risk factor, COVID-related personal concerns ($\beta=.15$).

3.2.2. Perceived need for help

The multivariate analysis explained 38.4% of the variance in *perceived need for help* (Table 3).

Table 3. Hierarchical Regression for Perceived Need for Help.

Variable	B	95% CI for B		SE B	β	R ²	ΔR^2
		LL	UL				
Constant	1.53***	0.78	2.28	0.38			
<i>Step 1</i>						3.4	3.4
Age	0.00	-0.01	0.01	0.00	-0.05		
Has a partner (yes)	0.04	-0.09	0.17	0.06	0.04		
<i>Step 2</i>						5.0	1.5
Covid-related exposure	0.02	-0.05	0.08	0.03	0.02		
<i>Step 3</i>						7.7	2.8
Health status	0.02	-0.04	0.09	0.03	0.04		
At risk for Corona (Yes)	-0.12	-0.31	0.07	0.10	-0.07		
<i>Step 4</i>						17.1	9.3
Pandemic concerns	0.02	-0.08	0.13	0.05	0.03		
Corona-related personal concerns	0.13	0.03	0.22	0.05	0.20*		
<i>Step 5</i>						28.4	11.4
Economic down-turn	-0.06	-0.14	0.01	0.04	-0.10		
Economic future prospect	-0.01	-0.09	0.07	0.04	-0.01		
Food insecurity (yes)	-0.38***	-0.57	-0.18	0.10	-0.20***		
<i>Step 6</i>						36.8	8.4
Postdoc	-0.35***	-0.49	-0.20	0.07	-0.26***		
Positive academic experiences	-0.03	-0.10	0.04	0.04	-0.05		
Missing face-to-face	0.04	0.00	0.09	0.02	0.11*		
Been discriminated	0.05	0.00	0.09	0.03	0.10		
University flexibility and teaching	0.00	-0.07	0.07	0.04	0.00		
Support uni. handling	0.00	-0.03	0.03	0.02	0.01		
Changes in academic plans	-0.35***	-0.49	-0.20	0.07	-0.26***		
<i>Step 7</i>						37.3	0.5
Support	-0.04	-0.11	0.03	0.04	-0.06		
<i>Step 8</i>							
Coping	-0.03*	-0.07	0.00	0.02	-0.13*	38.4	1.0

The first three steps in the hierarchical regression contributed less than 8% to the explained variance. Concerns about the pandemic (and in particular, personal concerns), entered in the fourth step contributed 9.4% to explained variance. Economic difficulties, and especially food insecurity, entered in the following step, contributed 11.4% to explained variance. Being a postdoc was associated with lower probability of needing help, explaining an additional 8.4%. Social support and coping did not contribute much to explained variance after all other variables were entered.

In the final equation three variables stood out as important protective/risk factors for need for help. International students in postdoc programs have the lowest need for help ($\beta=-0.26$), but (the few) students who experienced food insecurity ($\beta=0.20$) and those with high levels of COVID-related personal concerns ($\beta=0.20$) expressed the highest need for help.

4. Discussion

There is growing evidence showing that COVID-19 had negative impacts on university students across the world (e.g., Authors, 2022; Wang et al., 2020). This study focused on a particularly vulnerable group who is often overlooked – international students. Specifically, the current study examined risk and protective factors associated with depression, perceived need for help, and seeking help among international students in Israel.

Approximately 15% of participants reported moderately-severe or severe symptoms of depression. Symptoms of depression among international students in the current study were similar to those of local students as reported in a previous Israeli study (Authors, 2022). Overall, both risk and protective factors for depression identified in this study were consistent with other international findings regarding distress among university students (e.g., Limone & Toto, 2022, Sazakli et al., 2021) and other populations (Coiro, 2021, Salari et al., 2020) during the pandemic.

Our findings indicated that perceived coping made a significant contribution to explained variance in depression, even while controlling for all other risk and protective factors. The centrality of perceived coping in mental health in the context of COVID-19 has been shown in several other studies among university students (e.g., Authors, 2022), healthcare professionals (Pearman et al., 2020) and the general population (Cheng et al., 2021).

The students' reports of their health status explained a significant amount of variance in symptoms of depression (14.4%). This finding is of special note because international students in this study reported worse health status than local students as reported in a previous study (Authors, 2022), and this may contribute to their vulnerability to depression. Although all international students have medical insurance, the pandemic may have caused many difficulties in access to routine medical treatment for foreign students. We also found that students' COVID-related personal concerns were associated with depression. These concerns have been found among local students and the population at large, and may have affected international students in ways that were similar to others.

Students' perceptions of their academic experiences, including the flexibility of their host university, were related to depression. Students' symptoms of depression were lower when they perceived their university to be more flexible. This highlights the important role of the host university's attitudes, management and policy toward international students and their obligation to care for their wellbeing, the quality of their academic experience, and their success. Universities' abilities to be flexible in addressing emerging needs and unexpected difficulties experienced by international students can have a pivotal role in mitigating the mental health difficulties of this student group, especially during a global health crisis.

This study is one of the first to examine the level of perceived need for help among international students in during the COVID-19 pandemic. Interestingly, the highest level of need was related to the unique legal status of international students. The pandemic caused multiple disruptions in issuing and extending visas, as well as arranging travel on a short notice due to emergencies in their home country.

Consistent with other research with other student populations, we found that negative health status and COVID-related personal concerns were strongly associated with students' perceived need for help (Authors et al., 2022). Undergraduate and graduate students also reported higher need for help than postdoc students. This may reflect previous findings that younger age may be a risk factor for emotional distress during the pandemic (Kowal et al., 2020). This may also be attributed to developmental aspects. For instance, more mature students in postdoc programs may have developed better coping mechanisms than younger students in lower-level programs. Moreover, most students in postdoc programs were better supported and protected financially via ongoing fellowship payments compared to other students who may have relied on casual work which became hard to secure during the pandemic. In support of this interpretation, economic difficulties, particularly regarding food insecurity, were also strongly related to need for help. The findings suggest that postdoc students (at least in Israel) may be more resilient compared with students in other program levels.

The current study is one of the first to examine the characteristics of the international students who seek help from the university when it is offered. As expected, seeking help was strongly associated with the perceived need for help. The current study also aimed to identify and differentiate between students who acknowledged their need for help but did not seek help and those who actually sought help. The current study made a limited contribution to our understanding to this distinction. The findings show that students with children tended to show interest in support when it was offered. It is of utmost importance to continue this line of enquiry in order to avoid situations in which international students are isolated, need help, and do not actively seek help. Further, it is important to understand whether help seeking is associated with having the relevant information, or perhaps reflects distrust in the university's support services or effectiveness. Uncovering the specific needs and obstacles of this vulnerable group of students can lead to universities providing them with appropriate and effective services.

5. Limitations

This study is the first conducted with international students in Israel during the COVID-19 pandemic. Nevertheless, its limitations need to be considered. First, although the sample is quite large for this relatively small group, its representativeness is not clear. Second, the study was cross-sectional and occurred in the first year of the pandemic. As the pandemic has changed considerably in the last couple of years, it is important to conduct longitudinal studies to examine changes in international students' mental health and need for help over time. Such longitudinal studies may also help identify the causal direction of some of the important bi-variate correlations identified in this study.

6. Implications

The current study indicates that a significant number of international students experience mental health difficulties and need help. Some of their needs are similar to those of local students, but needs are either more pressing than for local students or more unique to this group (e.g., concerns around legal issues such as visa extensions). Universities need to pay special attention to these issues, and to develop services which help international students in times of such mass disruption. There is also a need to provide international students with additional economic resources during emergency periods, and to be more sensitive to their emerging needs regarding health services and financial support; both seem to be central components of emotional distress associated with the health crisis (Goldrick-Rab et al., 2022). Furthermore, we found that flexibility on behalf of the university was a particularly important protective factor for international students. In extending support to this group, it is important to acknowledge the variability in their characteristics and hence their needs. Level of study and health status are two of the important factors to consider. Future studies may also help identify additional risk and protective factors, such as country of origin and relationships with family of origin.

Data availability: The datasets analyzed during the current study are available from the corresponding author on reasonable request.

Compliance with Ethical Standards.

Conflicts of Interest: The authors declare no conflict of interest.

Informed Consent: All participants provided informed consent prior to their participation in the study.

References

- Ahorsu, D. K., Pramukti, I., Strong, C., Wang, H. W., Griffiths, M. D., Lin, C. Y., & Ko, N. Y. (2021). COVID-19-related variables and its association with anxiety and suicidal ideation: differences between international and local university students in Taiwan. *Psychology Research and Behavior Management*, 14, 1857.
- Alam, M. D., Lu, J., Ni, L., Hu, S., & Xu, Y. (2021). Psychological outcomes and associated factors among the international students living in China during the COVID-19 pandemic. *Frontiers in psychiatry*, 1372. <https://doi.org/10.3389/fpsy.2021.707342>

- Alharbi, E. S., & Smith, A. P. (2018). Review of the literature on stress and wellbeing of international students in English-speaking countries. *International Education Studies*, 11(6), 22-44.
- Brunsting, N. C., Zachry, C., & Takeuchi, R. (2018). Predictors of undergraduate international student psychosocial adjustment to US universities: A systematic review from 2009-2018. *International journal of intercultural relations*, 66, 22-33.
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934.
- Central Bureau of Statistics (CBS) (2021). *Education – Israel annual statistics report number 72*. Jerusalem: Author.
- Chen, J. H., Li, Y., Wu, A. M., & Tong, K. K. (2020). The overlooked minority: Mental health of International students worldwide under the COVID-19 pandemic and beyond. *Asian Journal of Psychiatry*, 54.
- Cheng, C., Wang, H. Y., & Ebrahimi, O. V. (2021). Adjustment to a “new normal:” Coping flexibility and mental health issues during the COVID-19 pandemic. *Frontiers in Psychiatry*, 12, 626197.
- Coiro, M. J., Watson, K. H., Cirioglio, A., Jones, M., Wolfson, A. R., Reisman, J., & Compas, B. E. (2021). Coping with COVID-19 stress: Associations with depression and anxiety in a diverse sample of US adults. *Current Psychology*, 1-13.
- Deng, J., Zhou, F., Hou, W., Silver, Z., Wong, C. Y., Chang, O., ... & Zuo, Q. K. (2021). The prevalence of depression, anxiety, and sleep disturbances in COVID-19 patients: a meta-analysis. *Annals of the New York Academy of Sciences*, 1486(1), 90-111.
- DeSalvo, K. B., Bloser, N., Reynolds, K., He, J., & Muntner, P. (2006). Mortality prediction with a single general self-rated health question. *Journal of General Internal Medicine*, 21(3), 267-275.
- Dunley, P., & Papadopoulos, A. (2019). Why Is It So Hard to Get Help? Barriers to Help-Seeking in Postsecondary Students Struggling with Mental Health Issues: a Scoping Review. *International Journal of Mental Health and Addiction*, 17(3), 699-715.
- Fialho, P. M. M., Spatafora, F., Kühne, L., Busse, H., Helmer, S. M., Zeeb, H., ... & Pischke, C. R. (2021). Perceptions of study conditions and depressive symptoms during the COVID-19 pandemic among university students in Germany: Results of the international COVID-19 student well-being study. *Frontiers in Public Health*, 9.
- Firang, D. (2020). The impact of COVID-19 pandemic on international students in Canada. *International Social Work*, 63(6), 820-824.
- Gallagher, H. L., Doherty, A. Z., & Obonyo, M. (2020). International student experiences in Queensland during COVID-19. *International Social Work*, 63(6), 815-819.
- Goldrick-Rab, S., Coca, V., Gill, J., Peele, M., Clark, K., & Looker, E. (2022). Self-reported COVID-19 infection and implications for mental health and food insecurity among American college students. *Proceedings of the National Academy of Sciences*, 119(7), e2111787119.
- Gronholm, P., Nosé, M., Van Brakel, W., Eaton, J., Ebenso, B., Fiekert, K., . . . Thornicroft, G. (2021). Reducing stigma and discrimination associated with COVID-19: Early stage pandemic rapid review and practical recommendations. *Epidemiology and Psychiatric Sciences*, 1-23.
- Horesh, D. & Brown, A. D. (2020). Covid-19 response: Traumatic stress in the age of Covid-19: A call to close critical gaps and adapt to new realities. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(4), 331-335.
- Khan, K., Li, Y., Liu, S., & Li, C. (2021). Psychological distress and trust in University Management Among International students during the COVID-19 pandemic. *Frontiers in psychology*, 12, 2287.
- Kim, H. R., & Kim, E. J. (2021). Factors Associated with Mental Health among International Students during the COVID-19 Pandemic in South Korea. *International Journal of Environmental Research and Public Health*, 18, 11381.
- Kliem, S., Mößle, T., Rehbein, F., Hellmann, D. F., Zenger, M., & Brähler, E. (2015). A brief form of the Perceived Social Support Questionnaire (F-SozU) was developed, validated, and standardized. *Journal of Clinical Epidemiology*, 68(5), 551-562.
- Kowal, M., Coll-Martín, T., Ikizer, G., Rasmussen, J., Eichel, K., Studzińska, A., Koszałkowska, K., Karwowski, M., Najmussağib, A., Pankowski, D., Lieberoth, A., & Ahmed, O. (2020). Who is the Most Stressed During the COVID-19 Pandemic? Data From 26 Countries and Areas. *Applied Psychology: Health and Well-Being*, 12(4), 946-966.
- Kroenke, K., & Spitzer, R. L. (2002). The PHQ-9: a new depression diagnostic and severity measure. *Psychiatric Annals*, 32(9), 509-515.
- Lai, A. Y.-k., Lee, L., Wang, M.-p., Feng, Y., Lai, T. T.-k., Ho, L.-m., Lam, V. S.-f., Ip, M. S.-m., & Lam, T.-h. (2020). Mental Health Impacts of the COVID-19 Pandemic on International University Students, Related Stressors, and Coping Strategies. *Frontiers in Psychiatry*, 11.

- Li, M., Su, H., Liao, Z., Qiu, Y., Chen, Y., Zhu, J., ... & Qi, C. (2021). Gender differences in mental health disorder and substance abuse of Chinese international college students during the CoViD-19 pandemic. *Frontiers in Psychiatry*, 1409.
- Limone, P., & Toto, G. A. (2022). Factors that predispose undergraduates to mental issues: A cumulative literature review for future research perspectives. *Frontiers in Public Health*, 10.
- Liu, C. H., Zhang, E., Wong, G. T. F., Hyun, S., & Hahm, H. C. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for U.S. young adult mental health. *Psychiatry Research*, 290, 113172.
- Ma, H. & Miller, C. (2020): Trapped in a double bind: Chinese overseas student anxiety during the COVID-19 pandemic. *Health Communication*.
- Mazza, C., Ricci, E., Biondi, S., Colasanti, M., Ferracuti, S., Napoli, C., & Roma, P. (2020). A Nationwide Survey of Psychological Distress among Italian People during the COVID-19 Pandemic: Immediate Psychological Responses and Associated Factors. *International Journal of Environmental Research and Public Health*, 17(9).
- Misirlis, N., Zwaan, M., Sotiriou, A., & Weber, D. (2020). International students' loneliness, depression and stress levels in Covid-19 crisis: The role of social media and the host university. *Journal of Contemporary Education Theory & Research (JCETR)*, 4(2), 20-25.
- Nam, B. H., Marshall, R. C., Tian, X., & Jiang, X. (2021). "Why universities need to actively combat Sinophobia": racially-traumatic experiences of Chinese international students in the United States during COVID-19. *British Journal of Guidance & Counselling*, 1-15.
- Nash, S., Sixbey, M., An, S., & Puig, A. (2017). University students' perceived need for mental health services: A study of variables related to not seeking help. *Psychological Services*, 14(4), 502.
- Oanh (Olena) Thi Kim Nguyen & Varsha Devi Balakrishnan (2020). International students in Australia – during and after COVID-19. *Higher Education Research & Development*, 39:7, 1372-1376.
- Pearman, A., Hughes, M. L., Smith, E. L., & Neupert, S. D. (2020). Mental health challenges of United States healthcare professionals during COVID-19. *Frontiers in Psychology*, 11, 2065.
- Pham, N. C., & Shi, J. R. (2020). A qualitative study on mental distress of Vietnamese students in the USA in the COVID 19 era. *Asia Pacific Journal of Health Management*, 15(3), 45-57.
- Ramia, G. (2021). Crises in international education, and government responses: a comparative analysis of racial discrimination and violence towards international students. *Higher Education*, 82(3), 599-613.
- Romeo, A., Benfante, A., Castelli, L., & Di Tella, M. (2021). Psychological Distress among Italian University Students Compared to General Workers during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 18(5).
- Salari, N., Hosseini-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., ... & Khaledi-Paveh, B. (2020). Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Globalization and Health*, 16(1), 1-11.
- Sazakli, E., Leotsinidis, M., Bakola, M., Kitsou, K. S., Katsifara, A., Konstantopoulou, A., & Jelastopulu, E. (2021). Prevalence and associated factors of anxiety and depression in students at a Greek university during COVID-19 lockdown. *Journal of public health research*, 10(3).
- Schanzenbach, D. and A. Pitts, *How Much Has Food Insecurity Risen? Evidence from the Census Household Pulse Survey*, in *Institute for Policy Research Rapid Research Report*. 2020.
- Versteeg, M., & Kappe, R. (2021). Resilience and Higher Education Support as Protective Factors for Student Academic Stress and Depression During Covid-19 in the Netherlands. *Frontiers in Public Health*, 1555.
- Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating Mental Health of US College Students During the COVID-19 Pandemic: Cross-Sectional Survey Study. *J Med Internet Res*, 22(9), e22817.
- Xiong, Y., Rose Parasath, P., Zhang, Q., & Jeon, L. (2022). International students' perceived discrimination and psychological distress during the COVID-19 pandemic. *Journal of American College Health*, 1-12.
- Xu, T. (2021). Psychological Distress of International Students during the COVID-19 Pandemic in China: Multidimensional Effects of External Environment, Individuals' Behavior, and Their Values. *International Journal of Environmental Research and Public Health*, 18(18).
- Yang, F. (2021). Coping strategies, cyberbullying behaviors, and depression among Chinese netizens during the COVID-19 pandemic: a web-based nationwide survey. *Journal of Affective Disorders*, 281, 138-144.

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